10-CH Level Shifter Integrated with Gate Power

Features

- **Input Supply Range: 2.6V~5.5V**
- **Current Mode Boost Controller for V_{GON}**
  - **Fixed 600kHz Switching Frequency**
  - **Integrated 45V/1.5A,1.3Ω Switching NMOS**
  - **Input voltage, VINP=4.5V to 15V**
  - **Output Voltage, V_{GON} = 17V to 39V**
  - **Up 80% Efficiency (5mA < Load Current)**
  - **Up 75% Efficiency (100mA < Load Current)**
  - **2% Output Regulation**
- **Built-In Power on Sequence and Soft Start Function**
- **Protection Function**
  - **Input Under Voltage Lockout (UVLO)**
  - **Thermal Overload Protection (TOP)(150°C)**
  - **Output Over Voltage Protection for V_{GON} (OVP) (39V)**
  - **Over Current Protection for V_{GON} (OCP) (1.5A typ.)**
  - **Output Under Voltage Protection (UVP) (FBG≦0.8V)**
- **Thermal Compensation Function**
  - **V_{GON} temperature compensation**
  - **V_{com} temperature compensation**
- **10-Channel Level Shifter**
  - **+45V Highest Voltage Level**
  - **-30V Lowest Voltage Level**
  - **Maximum 700ns Rising/Falling Time**
  - **500mA Peak Current**
  - **20mA Continuous Current**
- **40-pin, TQFN(5mmx5mm) Package**
- **RoHS Compliant**

Applications

- **GOA TFT-LCD Panel**

General Description

The G1588 integrated one V_{GON} boost converter with a high voltage level shifter. This device is suitable for GOA TFT-LCD panel applications.

The V_{GON} boost converter is a current mode regulator with a temperature compensation feature. The output voltage is adjusted according to the voltage on the VT pin (temperature reading) and the voltage level is set by voltage reference on the END pin. This boost converter has an integrated 45V/1.3Ω NMOS switch and a fixed 600kHz switching frequency. It provides fast transient response to pulsed loading while achieving efficiency over 85%.

The level shifters transform the logic-level controlled signals, which are generated by the display timing controller (TCON), into the high-level signals needed by LCD panel. Different CKH1~6 output patterns will be generated by different external settings. Each channel of level shifter output uses low impedance transistors to achieve fast rising and falling time, even when driving the capacitive loads present in LCD applications.

G1588 can also be used as a stand-alone level shifter. Connecting SHD to GND can disable whole boost function, shut down function, temperature compensation function, UVP, OCP except for XON function.

G1588 features extensive protection functions that include UVLO, OVP, UVP, OCP and OTP. The device operates over the temperature range of -40°C to +85°C.

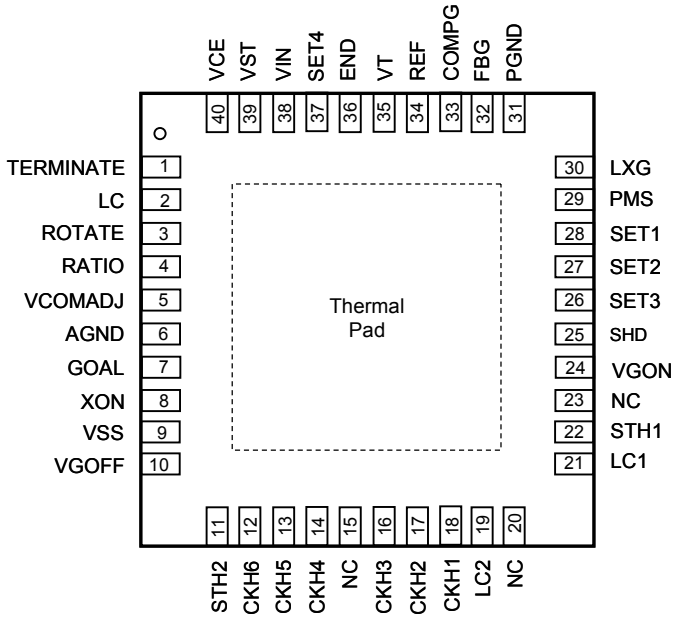
G1588 is available in a 5mmx5mm 40-lead TQFN Package.

Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G1588RG1U	1588	-40°C~+85°C	TQFN5X5-40

Note: RG:TQFN5X5-40
1: Bonding code
U: Tape & Reel

Pin Configuration



G1588 TQFN5X5-40

Note: Recommend connecting the Thermal Pad to the Ground for excellent power dissipation.

Typical Application